WHAT IS CLAIMED IS:

1. A dry deposit of a non-volatile biologically functional and/or biologically active substance formed on a substrate, wherein said dry deposit retains biological function and/or activity, has a thickness ranging down to a monolayer, has a homogeneity of thickness not larger than ±10% and contains molecule clusters with a size between 5 nm and 50 nm.

2. The dry deposit of a non-volatile biologically functional and/or biologically active substance in accordance with claim 1, wherein the molecule clusters are densely packed but not completely coalesced, and said dry deposit of a non-volatile biologically functional and/or biologically active substance has intercluster channels sufficiently penetrable by ligands.

3. The dry deposit in accordance with claim 1 which is formed on a substrate by electrospraying a solution of a non-volatile biologically functional and/or biologically active substance.

4. The dry deposit of a non-volatile biologically functional and/or biologically active substance in accordance with claim 1 which is formed as a film.

5. A sample comprising a substrate, and a plurality of dry deposits of different non-volatile biologically functional and/or biologically active substances electrosprayed on said substrate, wherein each of said dry deposits is in accordance with the dry deposit of claim 1.

6. The sample in accordance with claim 5, wherein said electrosprayed dry deposits of different substances are formed at a density of two to more than 200,000 deposits per square inch.

7. An apparatus for depositing a sample of a nonvolatile biologically functional and/or biologically active substance onto a deposit area of a substrate by electrospraying a solution comprising a non-volatile biologically functional and/or biologically active substance, the apparatus comprising:

an electrosprayer for creating from the solution, in a gas-filled space, a mist of charged particles including the non-volatile biologically functional and/or biologically active substance;

an electrophotic means for creating, selectively by illumination or non-illumination,

a first potential, attractive to the charged particles, on the deposit areas of the substrate surface, and

a second potential, not attractive to the charged particles, on areas of the substrate surface other than the deposit areas.

8. The apparatus according to claim 7, comprising a first electrostatic device coupled to the substrate.

9. The apparatus according to claim 7, comprising a mask disposed a distance below the surface of the substrate.

10. The apparatus according to claim 9, comprising a source of illumination to shine a light pattern of deposit areas through the mask onto the substrate.

11. An apparatus for depositing a sample of a nonvolatile biologically functional and/or biologically active substance onto a deposit area of a substrate by electrospraying a solution comprising a non-volatile biologically functional and/or biologically active substance, the apparatus comprising:

an electrosprayer for creating from the solution, in a gas-filled space, a mist of charged particles including the non-volatile biologically functional and/or biologically active substance;

a first electrostatic device holding a surface of the substrate adjacent to the deposit area at a first potential attractive to the charged particles; and

a mask held at a potential repulsive to the charged particles, the mask being disposed a distance above the surface of the substrate, the mask including a hole therethrough located above the deposit area;

wherein a size of the hole is in a predetermined ratio to the distance, and wherein the predetermined ratio, the first potential, and the second potential generate an electric field in a region of the hole whereby the charged particles are focused and the deposit area is smaller than a hole area of the hole.

12. The apparatus in accordance with claim 11, wherein the mask reaches the second potential by incorporating charge from the charged particles.

13. The apparatus in accordance with claim 12, wherein the non-conducting material has a surface absorbance

of the charged particles such that the second potential is repulsive to the mist of charged particles.

14. The apparatus in accordance with claim 13, wherein the mask is made of an electrically non-conducting material.

15. The apparatus in accordance with claim 13, wherein the mask is made of an electrically conducting material.

16. The apparatus in accordance with claim 11, wherein the mask is made of an electrically conducting material.

17. The apparatus in accordance with claim 16, wherein the apparatus includes a second electrostatic device holding the mask to the second potential.

18. The apparatus according to claim 11, comprising a mask shifter for moving the mask parallel to the substrate after deposition of the charged particles onto the deposit area; whereby another portion of the surface of the substrate may become the deposit area.

19. The apparatus according to claim 18, comprising means to oscillate the capillary above the mask while the mask moves.

20. The apparatus according to claim 19, wherein the mask includes an array of holes.

21. The apparatus according to claim 19, comprising means for displacing the mask a specified amount generally parallel to the substrate surface after a deposition of a particular substance.

22. The apparatus according to claim 19, wherein the displacement is less than spacing between adjacent ones of the holes, whereby a pattern of spots can be formed in an array of multicomponent matrices.

23. The apparatus according to claim 11, comprising a guard ring having a potential of the same sign as the charged particles leaving the capillary tip and positioned approximately at a level of the capillary tip to surround a zone of electrospray discharge with a charge that repels the charged particles, whereby scatter during electrospray is prevented.

24. The apparatus according to claim 11, comprising means for periodic recharging of the substrate surface with a stream of counter-ions from a corona discharge.

25. The apparatus according to claim 24, wherein the means for periodic recharging comprises an array of microelectrodes in a shielded chamber.

26. The apparatus according to claim 11, comprising a non-conductive protective screen disposed around the mist.

27. The apparatus according to claim 26, wherein the protective screen is perforated.

28. The apparatus according to claim 26, wherein the protective screen is conical.

29. The apparatus according to claim 26, wherein the protective screen is cylindrical.

30. The apparatus according to claim 11, wherein the hole in the mask is not round.